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AS 1900 (2002) (English): Flotation aids for water familiarization and swimming tuition [Authority: Australian Consumer Protection Notice No. 3 of 2009]

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11th Chief Justice of the High Court

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AS 1900

AS 1900—2002

Australian Standard™

Flotation aids for water familiarization and swimming tuition

Standards Australia

This Australian Standard was prepared by Committee CS-021, Swimming Aids. It was approved on behalf of the Council of Standards Australia on 30 November 2001 and published on 21 January 2002.

The following interests are represented on Committee CS-021:

- Australian Chamber of Commerce and Industry
- Australian Competition and Consumer Commission
- Australian Retailers Association
- Australian Toy Association
- Austswim
- Department of Fair Trading, Consumer Protection Agency, N.S.W.
- Department of Sport and Recreation, N.S.W.
- Federal Bureau of Consumer Affairs, Australia
- Institution of Engineers Australia
- Ministry of Fair Trading, W.A.
- National Safety Council of Australia
- Office of Fair Trading and Business Affairs, Vic.
- Royal Life Saving Society, Australia
- Swimming Pool and Spa Association of Australia

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This Standard was issued in draft form for comment as DR 97084.

Australian Standard™

Flotation aids for water familiarization and swimming tuition

Originated as AS 1900—1976.
Previous edition 1991.
Sixth edition 2002.

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Published by Standards Australia International Ltd
GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 4253 X

PREFACE

This Standard was prepared by the Standards Australia Committee CS-021, Swimming Aids, to supersede AS 1900—1991, *Flotation toys and swimming aids for children* following agreement within the Committee that a revision was required to simplify the Standard.

The principal difference from the previous edition is a reduction in the categories of product covered. The Standard is now limited to flotation aids worn on or attached to the body, or in which the user sits, and which provide flotation assistance to enable a person to gain confidence through water familiarization or be given swimming tuition.

The Committee agreed that flotation toys should be covered by the AS 1647 series, and that unattached flotation devices should no longer be included within AS 1900.

Other changes of note in this revision, which now covers flotation aids for people of all ages (as opposed to children only in the previous edition), are as follows:

(a) A reduction in the overpressure test from 20 kPa to 15 kPa. 15 kPa is approximately twice the pressure which an adult could be expected to achieve via oral inflation.

(b) A simplification of the marking requirements.

(c) The addition of an appendix outlining a test for resistance to chlorinated water and ultra-violet light.

(d) The addition of an appendix outlining tests for determining fastener security.

(e) The addition of an appendix outlining a test for determining the durability of markings.

(f) An expansion of the information to be supplied with a flotation aid.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendix to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

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FOREWORD

The simplification of AS 1900 in this revision is seen by the members of Committee CS-021 as a positive step in an attempt to reduce the number of drownings and near-drownings each year which occur in both municipal and backyard swimming pools.

The Committee agreed that AS 1900 should focus on the in-water safety of non-swimmers and that the scope of the Standard should be restricted. The Standard now caters only for those flotation aids worn on or attached to the body, or in which the user sits, and are specifically designed to either enable individuals to gain confidence through water familiarization, or to assist them in acquiring unaided buoyancy through swimming tuition.

The reason for the exclusion of flotation toys from this edition of AS 1900 is that, although such items are unarguably used most of the time to provide flotation assistance, they are first and foremost toys, and should therefore be encompassed within the AS 1647 series, which was written specifically for toys. Similarly, kickboards and other unattached flotation devices are also excluded from this Standard as such items are generally used either in conjunction with a flotation aid for swimming tuition or as a training aid by people who are able to swim.

This Standard is aimed at specifying design and performance requirements for manufacturers of flotation aids. The marking requirements are seen by the consumer organizations represented on Committee CS-021 as providing a sufficiently strong message to the purchasers of these products.

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STANDARDS AUSTRALIA

Australian Standard
Flotation aids for water familiarization and swimming tuition

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for the design, performance and marking of flotation aids worn on or attached to the body or in which the user sits for the purpose of either enabling persons to gain confidence through water familiarization, or to assist them in acquiring unaided buoyancy through swimming tuition.

The Standard does not apply to—

(a) flotation toys;

(b) unattached flotation devices;

(c) articles designed only for therapeutic use;

(d) articles designed for use by disabled persons; and

(e) personal flotation devices (PFDs) used in boating and other recreational water activities.

NOTES:

1 PFDs have different applications and are covered by other Standards. In general, the requirements specified in the PFD Standards* are more stringent than those specified herein.

2 Appendix A contains a list of typical products covered by this Standard and those that are not.

1.2 OBJECTIVE

The objective of this Standard is to provide requirements for the manufacture of flotation aids for non-swimmers which assist them in—

(a) becoming familiarized with water; and

(b) learning to swim.

1.3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard.

AS	
1192	Electroplated coatings—Nickel and chromium
1647	Children's toys (Safety requirements)
1647.2	Part 2: Constructional requirements
1789	Electroplated coatings—Zinc on iron or steel

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* AS 1512, *Personal flotation devices—Type 1.*

AS 1499, *Personal flotation devices—Type 2.*

AS 2260, *Personal flotation devices—Type 3.*

AS	
1790	Electroplated coatings—Cadmium on iron or steel
2001	Methods of test for textiles
2001.2.20	Method 2.20: Physical tests—Determination of seam breaking force
2001.4.3	Method 4.3: Colourfastness tests—Determination of colourfastness to rubbing
2001.4.21	Method 4.21: Colourfastness tests—Determination of colourfastness to light using an artificial light source (mercury vapour, tungsten filament, internally phosphor-coated lamp)
2193	Methods for calibrating and grading of force-measuring systems of testing machines
2860	Textiles—Stitch types—Classification and terminology
3633	Private swimming pools—Water quality
AS/NZS	
1957	Textiles—Care labelling

1.4 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

1.4.1 Flotation aid

An article which is worn on or attached to the body or in which the user sits and which, when fitted correctly in accordance with the manufacturer's instructions, provides flotation assistance for the purpose of enabling a person to gain confidence through water familiarization, or to acquire unaided buoyancy through swimming tuition.

NOTES:

1. The aid need neither support the wearer in a position with the nose, mouth and chin clear of the water, nor assist the wearer to achieve such a position.
2. Typical means of wearing or attaching a flotation aid include a singlet, shoulder straps, crotch straps, a harness, tapes or other arrangements.

1.4.2 Swimming aid vest

A flotation aid which fits over the shoulders and around the chest or waist of the wearer.

1.4.3 Flotation aid seat for babies and toddlers

A flotation aid in which the user sits.

1.4.4 Flotation toy

An article which is not worn or attached to the body and which, when ready for use, is intended as a buoyant toy.

1.4.5 Inflatable chamber

A compartment capable of being inflated with air for the purpose of providing buoyancy.

1.4.6 Normal room temperature

A temperature of 20 ±2°C.

SECTION 2 DESIGN AND CONSTRUCTION

2.1 GENERAL DESIGN

2.1.1 Security of fit

Flotation aids, except for those defined by Clause 1.4.3, shall be designed in such a way that they can be securely fitted to the appropriate size wearer and, when correctly fitted, shall be incapable of dislocation in normal use.

NOTE: Care should be taken when selecting a flotation aid that it is the correct size for the intended wearer.

Press-studs, hook-and-loop fastening fabric, or other press-close fastening methods requiring a tear-away or peel-away action to release, or knots, or 'D' rings, shall not be used as the sole means of maintaining the security of fit.

NOTE: See also Clause 2.5.

2.1.2 Finish

A flotation aid should be free from defects liable to impair its performance, and should have no hazardous sharp edges and points which could injure the wearer or others, or which could damage any inflatable chamber in the aid. Where flotation aids are manufactured from moulded plastics, all flashing shall be removed.

NOTE: Tests for hazardous sharp edges and points can be found in AS 1647.2.

2.2 SOURCE OF BUOYANCY

Where the buoyancy of a flotation aid is achieved by cellular material, inflatable chambers or hollow moulded chambers, or a combination of these, it shall meet the following requirements:

(a) Cellular material shall be of the closed-cell type.

(b) Inflatable chambers shall incorporate valves complying with the requirements of Clause 2.3.

(c) Hollow moulded chambers shall be designed to prevent the ingress of water into those chambers.

NOTE: Closed-cell material may be natural (e.g. cork) or made from plastics.

2.3 VALVES

2.3.1 General

Each valve shall be fitted with a non-return valve and a permanently attached stopper.

2.3.2 Protrusion

When the flotation aid is ready for use, valves shall not protrude beyond the surface of the aid by more than 10 mm.

2.3.3 Mouthpiece

Valves shall be designed for oral inflation. The mouthpiece shall be non-metallic and shall have a smooth finish. Tyre valves shall not be used.

2.4 METAL PARTS

All metal parts shall be resistant to corrosion by fresh water, salt water and chlorinated pool water, or shall be adequately protected against corrosion by electroplating, complying with the following requirements:

(a) *Nickel plus chromium plating*

Not inferior to a coating complying with AS 1192 in respect of service condition number '4'.

(b) *Nickel plating*

Not inferior to application grade 'severe' of AS 1192.

(c) *Cadmium plating*

Not inferior to Class Fe/Cd 25c, with passivation, of AS 1790.

(d) *Zinc plating*

Not inferior to Class Fe/Nz 25c, with passivation, of AS 1789.

NOTE: Attention is drawn to the necessity to prevent corrosion by galvanic action and by substances used for the coating of fabrics.

2.5 WEBBING OR TAPES

2.5.1 Attachment with webbing or tapes

If intended to bear directly on the body of the wearer, webbing or tapes shall not be less than 20 mm wide when wet and shall be designed to maintain a flat profile.

2.5.2 Finish

The ends of webbing or tapes shall be finished by such means that prevent them from fraying.

2.5.3 Fasteners

Fasteners shall not be removable from the webbing or tapes without damage to the flotation aid or the use of a tool.

2.6 SEWED FABRICS

2.6.1 Stitching

All stitching shall be—

(a) double row; and

(b) lockstitch conforming to Stitch Type 301 in accordance with AS 2860, or a locking-type stitch suitable for the fabric being sewn.

NOTE: An illustration of lockstitch conforming to Stitch Type 301 in AS 2860 is contained in Appendix G.

Where monofilament fibre is used, backstitching shall also be employed. Where a breakage occurs, the area shall be oversewn by restarting the stitching not less than 25 mm back from the break.

2.6.2 Thread

Thread used for sewing shall be compatible with the fabrics being sewn. If pure natural fibre thread is used, the thread shall be treated to resist rotting and shall not be used to sew load-bearing components.

2.6.3 Strength of sewed seam

When tested in accordance with AS 2001.2.20, the breaking strength of a sewed seam shall not be less than 250 N. Except where items tested in accordance with Clause 3.2 fall into either the age 'over 12' or mass equivalent to age 'over 50' categories of Table C3.1 then the breaking strength of a sewed seam shall not be less than 450 N.

2.7 INFLATABLE AIDS

Inflatable aids shall incorporate a minimum of two separate chambers. Failure or deflation of any chamber shall not result in a loss of buoyancy greater than two-thirds of the original buoyancy. Failure or deflation of any chamber shall not affect the security of fit of the aid, as required by Clause 2.1.1.

SECTION 3 PERFORMANCE

3.1 BUOYANCY OF FLOTATION AIDS

When determined in accordance with Appendix B, the buoyancy of a flotation aid shall not be less than that specified in Table 3.1.

TABLE 3.1
BUOYANCY OF FLOTATION AIDS

Category of wearer		Buoyancy, N					
		Type of flotation aid					
Age years	Mass equivalent to age kg	Swimming aid vests	Attached flotation rings	Inflatable armbands (per pair)	Flotation belts	Back-bubble	Flotation seats
Up to 2	Up to 15	N/A	N/A	20	N/A	N/A	100
2 to 6	15 to 25	20	40	25	15	20	N/A
6 to 12	25 to 50	25	49	30	20	25	N/A
Over 12	Over 50	30	78	40	25	30	N/A

Flotation aids which have intentionally adjustable buoyancy (e.g. in the form of removable foam layers), shall be tested at their maximum buoyancy.

If a flotation aid does not have the ‘Age’ and ‘Mass equivalent to age’ (see Table 3.1) in the same buoyancy category, or they overlap categories, then the aid shall be tested to the highest buoyancy category.

3.2 STRENGTH OF ATTACHMENT ASSEMBLY

When tested in accordance with Appendix C, the attachment assembly shall not—

(a) show evidence of detachment from the flotation aid;

(b) show evidence of webbing or tapes slipping more than 25 mm past or through a fastening device (e.g. buckle, snap-lock fitting and similar); or

(c) fail or unfasten so that the test weight is released.

3.3 RESISTANCE TO HEAT

The ability of the flotation aid to withstand exposure to heat shall be such that when tested in accordance with Appendix B, it shall not suffer a loss of buoyancy greater than 10 percent of its initial buoyancy after being subjected to a temperature of 60 ±2°C for 4 h. For the purpose of this requirement, flotation aids which employ inflatable chambers as a source of buoyancy shall have those chambers inflated to a pressure of 6.9 +0.5, −0 kPa at normal room temperature prior to exposure to heat.

3.4 INFLATABLE FLOTATION AIDS

3.4.1 Valves

When an inflatable chamber is inflated to 6.9 +0.5, −0 kPa and the stopper is removed, the non-return valve shall prevent the deflation of the chamber to a pressure of less than 3 kPa in a period of 2 min.

3.4.2 Resistance to leakage and bursting

When inflated to 6.9 +0.5, −0 kPa at normal room temperature and completely submerged in water for 2 min, inflatable chambers shall show no signs of air leakage. When inflated to a pressure of not less than 15 kPa at normal room temperature for 2 min, inflatable chambers shall not burst or show any evidence of leakage, nor shall any seam fail.

3.5 RESISTANCE OF MARKING TO ABRASION

The marking specified in Clause 4.1(c) and (d) shall remain legible when tested in accordance with Appendix D.

3.6 BUOYANCY OF CELLULAR MATERIAL

Cellular material used in the construction of flotation aids shall be such that, following an immersion period of 24 h, the loss of buoyancy of the material shall not exceed 5% of that initially determined in accordance with Appendix B.

3.7 FASTENER SECURITY

Where a fastener relies on pressure for release, it shall be necessary to apply a force of more than 50 N to the release mechanism of the fastener in order for it to be opened. Testing shall be in accordance with Appendix E.

Zip fasteners shall remain functional and not separate when tested in accordance with Appendix F.

3.8 SEQUENCE OF TESTING

Test samples except those selected for Clause 3.7 shall undergo all the applicable tests listed in Table 3.2 and the tests shall be performed in the sequence shown.

Tests for fastener release security, Clause 3.7, should be performed on separate samples as the flotation aid may be destroyed as a result of the test procedure.

TABLE 3.2
SEQUENCE OF TESTING

Test sequence	Test	
	Clause No.	**Title**
1	3.1	Buoyancy of flotation aids
2	3.2	Strength of attachment assembly
3	3.3	Resistance to heat
4	3.1	Buoyancy of flotation aids (repeat test)
5	3.4.1	Valves (where applicable)
6	3.4.2	Resistance to leakage and bursting of inflatable chambers (where applicable)
7	3.5	Resistance of marking to abrasion
8	3.6	Buoyancy of cellular material (where applicable)
9	3.1	Buoyancy of flotation aids (repeat test, where applicable)

SECTION 4 MARKING AND INFORMATION

4.1 MARKING OF ARTICLES

All flotation aids shall be legibly marked, in a colour contrasting with the background, with the following information:

(a) Name, trade name or trademark of the manufacturer or supplier in Australia.

(b) Manufacturing batch identification.

NOTE: Manufacturing batch identification should enable the manufacturer to identify each batch of articles and their date of manufacture.

(c) For all flotation aids except swimming aid vests the following words, in block capitals not less than 6 mm in height when the aid is in a deflated state:

WARNING
USE ONLY UNDER
COMPETENT SUPERVISION

(d) For swimming aid vests, the following words, in block capitals no less than 6 mm in height when the aid is in a deflated state:

WARNING
USE ONLY UNDER
COMPETENT SUPERVISION
NOT FOR USE IN BOATING

(e) If a label is used to carry a warning, then it shall be permanently attached and after an item undergoes the testing in Appendix C, the label shall remain attached and the wording shall be legible.

NOTE: Information on textile care labelling can be found in AS/NZS 1957.

The marking specified in Items (c) and (d) above need not be presented in the same typeface or in the same layout as that shown, but the order of the words shall be as shown. The wording shall be placed in a conspicuous position on the outermost surface of the aid, and shall not be combined with or accompanied by any other words or matter (including any illustration) that would contradict or obscure the meaning of the warning.

NOTE: Affixing a label with the required marking to the aid would satisfy this requirement.

4.2 MARKING OF PACKAGING

The marking specified in Items (a) and (b) and Items (c) or (d) of Clause 4.1 shall also be clearly marked on the packaging, in a conspicuous position, in a colour contrasting with the background, in lettering not less than 6 mm in height. The following information shall also be clearly marked on the packaging:

(a) The purpose of the device.

(b) The age and body mass range, in accordance with Table 3.1, of the person for whom the flotation aid is designed.

Where a flotation aid is sold without packaging, the above marking requirements shall apply to any shipping outer or display unit in which the flotation aid may be displayed at the point of sale. If a removable label is attached to the flotation aid and there is no other packaging, the marking requirements shall apply to the label.

4.3 INFORMATION SUPPLIED WITH FLOTATION AIDS

All information relating to the safe use of a flotation aid shall be supplied with the aid. Such information shall be marked on the packaging, or in the form of a leaflet or booklet supplied with the aid. The information shall include, as a minimum, advice on the following:

(a) How to fit the aid correctly.

(b) A reminder of the requirement for the wearer to be under constant, competent supervision, and that the supervisor should be within arm's reach of the wearer.

(c) How to check the aid for signs of wear and tear, and when to replace the aid.

(d) Care and storage of the aid.

NOTE: Manufacturers making a statement of compliance with this Australian Standard on a product, packaging, or promotional material related to that product are advised to ensure that such compliance is capable of being verified.

APPENDIX A

TYPICAL PRODUCTS COVERED AND NOT COVERED BY THIS STANDARD

(Informative)

A1 LIST OF TYPICAL PRODUCTS COVERED BY THIS STANDARD

This Standard applies to any product which falls into the definition in Clause 1.4.1. The Standard includes, but is not limited to, the following products:

Attached flotation rings (complete or broken)

Flotation seats for babies and toddlers

Back-bubbles

Inflatable armbands

Swimming aid vests

Flotation belts

Products which, after being fitted with separately sold accessories, meet the definition of Clause 1.4.1.

A2 LIST OF TYPICAL PRODUCTS NOT COVERED BY THIS STANDARD

Inflatable toy boats

Inflatable novelty shapes

Kickboards

Unattached flotation rings (complete or broken)

Pull buoys

Pool leisure seats and beds

All other unattached flotation devices

APPENDIX B

METHOD FOR DETERMINATION OF BUOYANCY

(Normative)

B1 SCOPE

This Appendix sets out the method for determining the buoyancy of a flotation aid.

B2 PRINCIPLE

The difference in weight between a submerged empty cage and the same cage submerged while containing the flotation aid is used to determine the buoyancy of the flotation aid.

B3 APPARATUS

The following apparatus is required:

(a) A suitable weighing mechanism or system accurate and readable to 0.1 kg or better.

(b) A suitable mesh cage large enough to contain the flotation aid under test.

(c) A tank, containing fresh water, large enough to allow the cage containing the flotation aid or its components to be submerged without causing overflow of water.

(d) Weights for the cage, if necessary (see Paragraph B4).

(e) A rig with suitable lifting tackle for positioning the cage in or out of the water.

B4 PROCEDURE

The procedure shall be as follows:

(a) Suspend the cage in the water in the tank so that it is completely submerged. Add sufficient weights to the cage, where necessary, so that when the flotation aid is inserted, the cage will remain wholly submerged. Note the submerged weight to the nearest 0.1 kg and record it as w_1.

(b) Raise the cage above the water surface and place the flotation aid under test inside the cage, ensuring that the following conditions are observed:

   (i) For flotation aids incorporating cellular material with an outer covering impervious to water, slit open the outer covering first to ensure that no air can be trapped.

   (ii) For inflatable flotation aids, inflate aid in accordance with the manufacturer's instructions to a pressure of 6.9 +0.5, −0 kPa.

(c) Submerge the cage and contents, taking care to ensure that no air is entrapped within any of the components. The top of the cage shall be at least 50 mm below the surface of the water. Ten minutes later, note the weight of the submerged cage and contents and record it as w_2.

B5 CALCULATION AND REPORT

Record the difference in weight ($w_1 - w_2$) between the submerged empty cage and the submerged cage containing the flotation aid.

Calculate and report the buoyancy, in newtons, of the flotation aid from the following equation:

$$\text{Buoyancy} = (w_1 - w_2) \times 9.8$$

APPENDIX C

METHOD OF TEST FOR ATTACHMENT ASSEMBLIES FOR FLOTATION AIDS

(Normative)

C1 SCOPE

This Appendix sets out the method for determining the strength of attachment assemblies for flotation aids and their resistance to the effects of chlorinated pool water and ultra-violet light.

NOTE: This test is not intended to determine security of fit.

C2 APPARATUS

The following apparatus is required:

(a) A vessel containing a sufficient volume of water, at a temperature of 32 ±2°C and complying with the requirements of AS 3633, to enable immersion of the flotation aid under test.

(b) A slotted table or platform to facilitate hanging of the attachment assembly of a flotation aid underneath it, or other suitable arrangement.

(c) A 500 W mercury vapour, tungsten filament, internally phosphor-coated, fluorescent lamp, as specified in AS 2001.4.21.

(d) Weights as specified by Table C3.1.

(e) An electric fan (optional—see Paragraph C3(d) below).

C3 PROCEDURE

The procedure shall be as follows (see also Figures C1, C2 and C3):

(a) For inflatable flotation aids, inflate the aid to a pressure of 6.9 +0.5, −0 kPa.

(b) Immerse the flotation aid in the water for a period of 2 h. Remove the aid from the water.

(c) Squeeze or towel-dry the aid to remove as much excess water as possible, and position the attachment assembly of the aid a distance of 200 ±5 mm from the lamp, ensuring that all areas where the attachment assembly connects to the aid, all fastening devices and as much of the remainder of the attachment assembly as possible, will be exposed to the radiation from the lamp at a distance no closer than 200 mm.

NOTE: Mounting the aid on the slotted table or platform will enable the above exposure criteria to be met in many instances (provided that the slot is wide enough), but will not be a suitable arrangement for flotation aids such as back-bubbles, where the webbing passes through the aid (see Figure C1). In such cases, the attachment assembly should, if possible, be removed from the aid for this test.

(d) Switch on the lamp and irradiate the attachment assembly for 2 h.

Cool the aid down to avoid heat damage to it and prevent the risk of fire using an appropriately positioned electric fan or similar.

(e) Repeat Steps (b) to (d) above another 5 times.

(f) Re-immerse the aid in the water and thoroughly soak it again.

(g) Where appropriate, fasten the ends of the components comprising the attachment assembly together (using any fastening devices provided) to ensure an even distribution of weight over the area of attachment to the flotation aid, and hang a weight as specified in Table C3.1 at the centre of the loop.

TABLE C3.1

TEST WEIGHTS

Age years	Mass equivalent to age kg	Test weights kg
up to 2	up to 15	7 ±0.1
2–6	15–25	12 ±0.1
6–12	20–50	25 ±0.1
over 12	over 50	45 ±0.1

(h) Allow the weight to hang for 2 min.

(i) Note whether any part of the attachment assembly became detached, whether any fastening device became unfastened, and the amount of slippage (if any) of webbing or tapes past or through a fastening device.

(j) If there is more than one set of tapes, repeat the test for each set.

If a flotation aid does not have the ‘Age’ and ‘Mass equivalent to age’ (see Table C3.1) against the same test weight, or they overlap test weights, then the aid shall be tested with the higher test weight of the two.

C4 REPORT

The report shall contain the following information:

(a) Whether or not any part of the attachment assembly became detached from the aid at the end of the 2 min period.

(b) Whether or not any fastening device became unfastened.

(c) The amount of slippage of any webbing or tapes past or through a fastening device.

(d) Whether or not there was any roping or rolling of any part of the attachment assembly designed to bear directly on the body of the wearer.

(e) Identification details of the device under test.

(f) Reference to this test method, i.e. AS 1900, Appendix C.

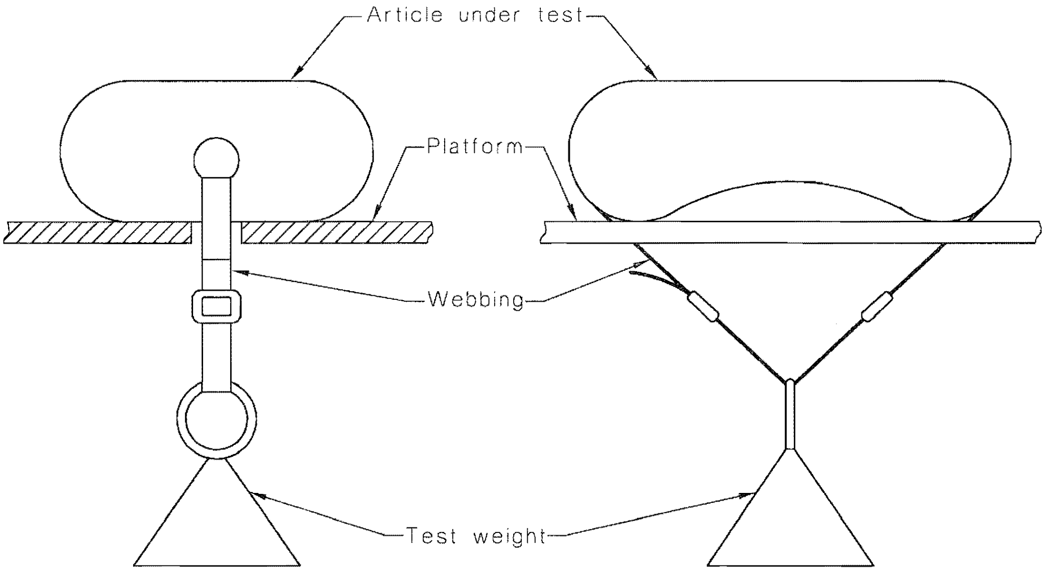


FIGURE C1 TYPICAL RIG FOR STRENGTH OF ATTACHMENT TEST FOR BACK-BUBBLES

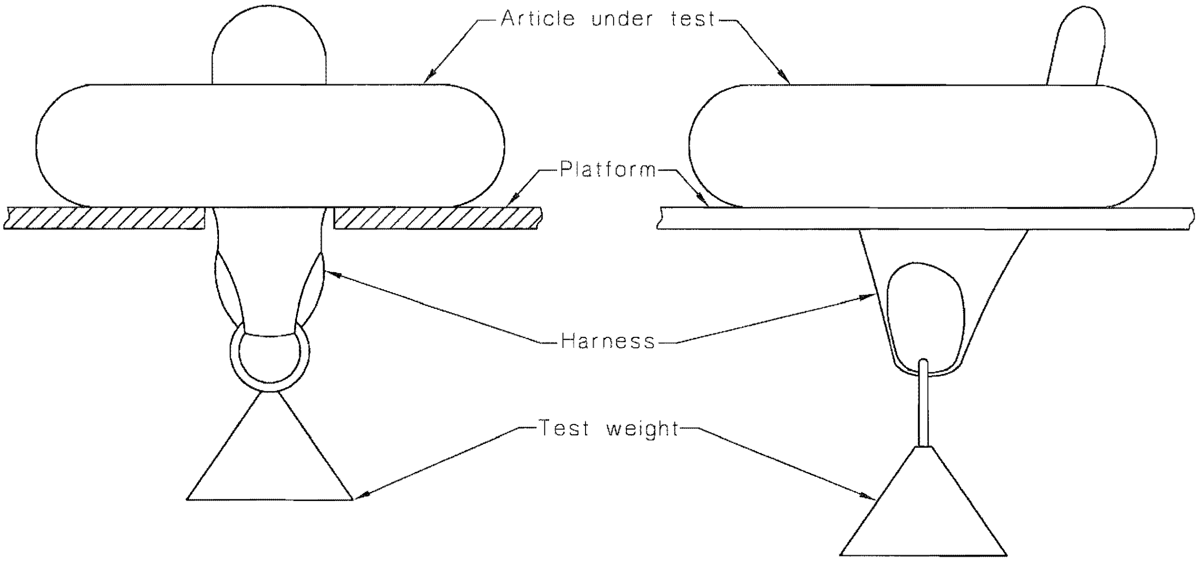


FIGURE C2 TYPICAL RIG FOR STRENGTH OF ATTACHMENT TEST FOR SWIM SEATS

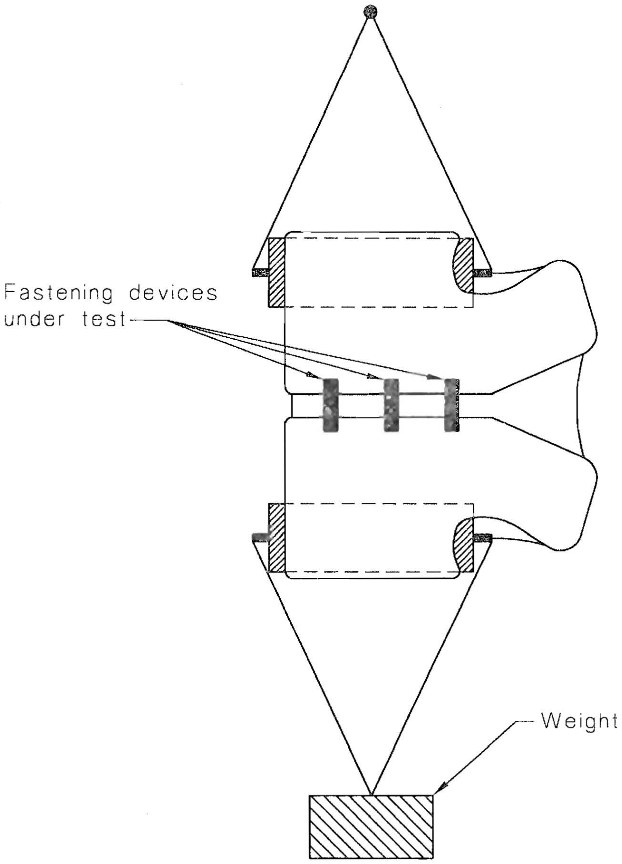


FIGURE C3 TYPICAL RIG FOR STRENGTH OF ATTACHMENT TEST FOR SWIMMING AID VESTS

APPENDIX D

METHOD FOR DETERMINATION OF RESISTANCE OF MARKING TO ABRASION

(Normative)

D1 SCOPE

This Appendix sets out the method for determining the resistance of marking to abrasion.

D2 APPARATUS

The following apparatus is required:

(a) Items (a) to (c) of Appendix C, Paragraph C2.

(b) Apparatus specified in AS 2001.4.3.

D3 PROCEDURE

The procedure shall be as follows:

(a) For inflatable flotation aids, inflate the aid to a pressure of 6.9 +0.5, −0 kPa.

(b) Test in accordance with the method specified in AS 2001.4.3 for 100 cycles.

(c) Determine whether or not the marking was damaged and if it remained legible in all details.

D4 REPORT

The report shall contain the following information:

(a) Whether or not the marking was damaged.

(b) Whether or not the marking remained legible in all details.

(c) Reference to this test method, i.e. AS 1900, Appendix D.

APPENDIX E

METHOD FOR DETERMINATION OF FASTENER RELEASE SECURITY

(Normative)

E1 SCOPE

This Appendix sets out the method for determining the security of pressure-for-release fasteners on flotation aids.

E2 PRINCIPLE

A specified force is applied perpendicular to the release mechanism to determine if it will resist opening. This force will be applied once at the beginning of the test procedure and once more at the end, the latter representing the 100th operation of the fastener.

E3 APPARATUS

The following apparatus is required:

(a) A suitable means of applying a normalizing force to the fastener. This could be achieved by clamping the webbing on one side of the fastener and hanging a weigh of suitable mass from the webbing on the other side.

(b) A means of applying a force of 50 N perpendicular to the release mechanism.

E4 PROCEDURE

The procedure shall be as follows:

(a) The fastener used for securing a flotation aid to the wearer, with the webbing attached to it shall be secured in a clamp. A force of 5 N in the direction of the webbing shall be applied to the webbing.

(b) A force of 50 N shall be applied to the release mechanism perpendicular to the release mechanism.

(c) The fastener shall be opened and closed 98 times.

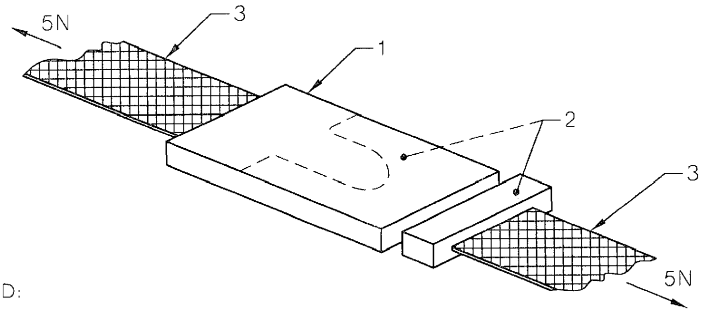
(d) Repeat Step (b).

(e) Where there is more than one fastener which requires pressure to release, each shall be tested separately.

(f) For designs of buckle, different to that shown in Figure E1, test houses shall develop an appropriate means of securing the buckle and strap under tension and applying a force of 50 N to the pressure release.

E5 REPORT

Record if the fastener opened or stayed closed on the two occasions the 50 N force was applied to the mechanism.



LEGEND:

1 = Buckle
2 = Locking device
3 = Webbing

FIGURE E1 EXAMPLE OF FORCES TO BE APPLIED

APPENDIX F

METHOD OF TESTING RESISTANCE OF ZIP FASTENERS TO LATERAL LOAD

(Normative)

F1 SCOPE

This Appendix sets out a method for testing the resistance to lateral load of the chain of a zip fastener.

F2 PRINCIPLE

The test specimen is subjected to a lateral load under controlled conditions while the fastener chain is in the closed position.

F3 APPARATUS

The testing machine shall be of either the constant-rate-of-traverse or the constant-rate-of-extension type, complying with the following requirements:

(a) The speed of the opening of the jaws shall be 10 ±1 cm/min.

(b) The load scale of the machine shall be accurate to Grade B as specified in AS 2193.

(c) The load range shall be such that the breaking load of the test specimen falls between 15 percent and 85 percent of the maximum on the scale.

A masking device for the slider, such as a face plate or blanking off plate, is required to confine the tension to the pull tab and its attachment to the slider.

Figure F1 gives a diagramatic sketch of the arrangement.

F4 PROCEDURE

The test procedure shall be as follows:

(a) Secure the test specimen in place with the gripping devices arranged so that at least half the width of each tape is gripped and there is at least 25 mm of closed chain on either side.

(b) Set the machine in motion until the specified loading is reached (see Table F1) or until the specimen fails if this occurs first. See Table F2 for classification categories.

F5 REPORT

The report shall state whether or not the functioning of the zip fastener was impaired and if the chain separated.

TABLE F1

LOADING FOR ZIP CLASSES

Loading, N				
Fastener classification				
U/L	L	M	M/H	H
180	225	270	380	490

TABLE F2
ZIP FASTENER CLASSIFICATION

Fastener classification	Width of interlocked teeth mm	Chain width mm
Ultra light (U/L)	Up to 4	Up to 25
Light (L)	Over 3.5 up to 5	Over 23 up to 28
Medium (M)	Over 4.5 up to 6.5	Over 28 up to 35
Medium heavy (M/H)	Over 5.5 up to 9	Over 32 up to 38
Heavy (H)	8 and over	Over 38

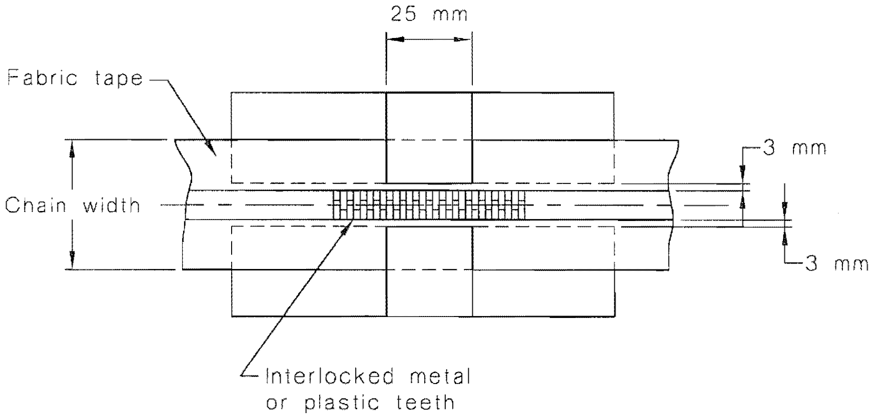


FIGURE F1 LATERAL LOAD TEST

APPENDIX G

A SUITABLE STITCH FOR USE IN FLOTATION AID FABRICATION

(Informative)

Figure G1 illustrates a suitable stitch for use in flotation aid fabrication. The stitch is formed with two threads: one needle thread, (1), and one bobbin thread, (a). A loop of thread 1 is passed through the material and interlaced with thread (a) on the other side. Thread 1 is pulled back so that the interlacing comes midway between the surfaces of the fabrics being sewn.

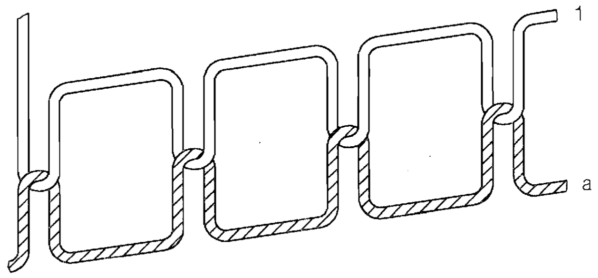


FIGURE G1 STITCH TYPE 301

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ISBN 0 7337 4253 X

Printed in Australia